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Professor Gilbert L. Houser, of the University of Iowa, contributes to the *Journal of Comparative Neurology* (Vol. XI, No. 2) a valuable monograph on the "Neurones of a Selachian," *Mustelus canis*. The anatomy of the nerve structures is given in great detail. Professor Houser shows commendable caution in refraining from "the tendency to elevate the results of specific methods into exclusive dogma." He closes his paper with these remarks suggestive of Golgi: "The knowledge which we possess, either anatomical or physiological, is not yet such as to permit us to interpret with certainty the greater number of the facts discovered, much less to attempt doctrinal constructions of a high order on the functional mechanism of the nervous elements."

In the *Bulletin of the United States Fish Commission* Dr. Eigenmann gives a useful account of the development of certain eggs supposed to be those of the Conger.

In the same *Bulletin* Dr. Hugh M. Smith gives a list of species of fishes the young of which are borne to Woods Hole in the Gulf Stream. Four of these, *Exonantes rondeleti*, *Ocyurus chrysurus*, *Scarus croicensis*, and *Sparisoma flavesceus*, had not been previously recorded to the north of Florida. Among the other tropical forms are *Sardinia pseudohispanica*, *Mycteroperca bonaci*, *Mycteroperca venenosa*, *Lutianus apodus*, *Lutianus analis*, *Chaetodon ocellatus*, *Chaetodon bricei*, *Teuthis ceruleus*, *Teuthis hepatus*, *Teuthis bahianus*, *Lactophrys tricornis*, and *Scorpaena plumieri*.

In the *Annotationes Zoologicae Japonenses* (Vol. III, Pt. IV), Dr. C. Ishihawa describes and figures two new gudgeons, *Leucogobio güntheri* and *L. jordani*. Both species belong to the rich fauna of Lake Biwa, the largest lake of Japan.

In the *Proceedings of the United States National Museum* (Vol. XXIV) Jordan and Starks give an account of the anatomy of *Apha-reus*, a Polynesian genus of "red snappers," rare in collections.

In the *Proceedings of the United States National Museum* (Vol. XXIV) Jordan and Starks give an account of the Atherinidæ, or silver-sides, found in the waters of Japan. Five species are enumerated, four of them being new. Two new genera, *Atherion* and *Iso*, are characterized.

D. S. J.

Zoölogy of the Maldivé and Laccadive Archipelagoes.—The results of the explorations of J. Stanley Gardiner in the Maldivé and

Laccadive archipelagoes of the Indian Ocean¹ are appearing in a series of parts that closely resembles the series of Willey's "Results." The first part contains an eleven-page "Narrative and Route of the Expedition," with two maps. This shows that one who goes on such a journey may expect exasperating delays of weeks at a time. Next follows "An Account of the Coral Formations of the Indian Ocean," by Gardiner, which is not completed, but shows that atolls have been formed in regions of *elevation* (and not always of depression, as called for by Darwin's theory). The accompanying papers are by Borradaile (who was with Gardiner in the early part of his trip) on the "Land Crustaceans"; by Cameron on "Hymenoptera"; and by Punnett on "Nemerteans." In the last paper the first mesonemertean from the Indian Ocean is recorded, — a Cephalothrix. The prevailing genera are Eupolia, Cerebratulus, and Drepanophorus, — genera widely distributed. As to the Hymenoptera, Cameron says the known species are Indian forms of wide distribution in the Oriental zoölogical region, and all the genera are of universal distribution in temperate and tropical countries, — such familiar genera as Crabro, Bembex, Polistes, and numerous Apidæ. The most general interest attaches, however, to the paper on "Land Crustaceans." "Their numbers, their ubiquity, their activity, combine to give them a prominence which is all the more marked from the absence of so many other land animals of continental areas. They are the chief scavengers of the island, play a great part in the destruction or disintegration of fruits, and probably aid in the distribution of seeds. The work done by them in burrowing along the sandy lagoon shore has a possible importance not hitherto noticed." The paper gives an exhaustive account of the anatomy of Cænobita, the land hermit crab. The gills seem to have undergone little modification, and the gill chamber is not at all a lung, but provision is made for keeping the gills moist by means of salt water apparently retained from possible rare visits to the sea. If this salt water is removed, a sticky fluid is exuded over the gills. If the gills be cut off, the crab lives by virtue of its abdominal respiration. Continuous submersion is fatal after a longer or shorter time, — one to six days. The habitation of the land hermit crab is very varied, — usually any kind of land or sea gastropod shell;

¹ Gardiner, J. Stanley (editor). *The Fauna and Geography of the Maldives and Laccadive Archipelagoes*, being an account of the work carried on and of the collections made by an expedition during the years 1899 and 1900. Vol. i, pt. i, Pls. I-V, text-figs. 1-23. Cambridge, University Press; London, C. J. Clay & Sons, 1901. Price 15s.

but also a serpulid worm tube, a half cocoanut shell, and a broken glass tube were appropriated. Ocypoda occurs here in two species, one of which lives and burrows in the sand, the other inland. Three grapsids are found; two Palæmonidæ, a Ligia, four Oniscidæ, and one of the Armadillidiidæ.

Recent Sporozoan Investigations.¹—This pamphlet, which is a revision and expansion of the articles published in the *Centralblatt für Bakteriologie* (Bde. XXVII and XXVIII), gives not only the most extensive, but also the fullest and most reliable, discussion of present knowledge on this group, which has been almost neglected until the appearance of recent studies on its structure and development. The chapters of Lühe's work take up the life history (1) of the Coccidia, (2) of the Hæmosporidia (malarial parasites), (3) of the Gregarinida, Myxosporidia, and the little-known groups of Microsporidia, Sarcosporidia, and Haplosporidia. The first two sections are particularly complete and satisfactory, and it is hard to find omissions, while the discussion of the various authors cited is admirably fair. The comparative table of terms used by different writers in describing the development of Coccidia will prove very useful in view of the entire lack of uniformity as to terms employed, — a defect so universal that even successive publications of the same investigator differ in terminology. Much would be gained by the adoption of a uniform set of terms as advocated by Lühe, but unfortunately the papers which have appeared since his have added to the confusion by making further changes.

The third chapter is the least satisfactory, probably, since the field covered by it is the least well known and is consequently most difficult to bring into relation with the other groups. Furthermore, the introduction of numerous additions to the original articles, in the form of lengthy footnotes and appendices, makes the treatise difficult to use at some points; and yet the gain in accuracy compensates for the slight lack of clearness.

In one point the work must be strongly criticised: the bibliographic methods employed are antiquated and cumbersome to an extent that interferes greatly with the clearness of the text. One may well wonder how the author could have done so well with such a confused system of reference, the same papers, *e.g.*, Labbé, "Sporozoa," being referred to in three different literature lists by as many different numbers.

¹ Lühe, M. *Ergebnisse der neueren Sporozoenforschung*. Jena, 1900.